UNITED STATES DEPARTMENT OF AGRICULTURE
Science and Education Administration
and
Agricultural Experiment Station of the
University of Puerto Rico
and
Institute of Food and Agricultural Sciences
of the University of Florida

ANNOUNCE

THE RELEASE OF BACTERIAL BLIGHT (*Xanthomonas* spp.) RESISTANT XR-235-1-1 BEAN GERM PLASM

The Science and Education Administration, Agricultural Research, United States Department of Agriculture, the Agricultural Experiment Station of the University of Puerto Rico, and the Institute of Food and Agricultural Sciences of the University of Florida announce the release of a bacterial blight (*Xanthomonas* spp.) resistant bean germ plasm line, XR-235-1-1.

The development of this germ plasm was carried out with partial support from the Agency for International Development under a contract (AID/ta-C-1296) entitled "Improvement of Tropical Production of Beans and Cowpeas Through Disease and Insect Control."

XR-235-1-1 is the result of 2 1/2 years of intensive selection through five generations of an interspecific cross, *Phaseolus vulgaris* x *P. coccineus*. The maternal line used was Florida 6-19, an F_4 bulk selection for reclining foliage and short internodes made in 1976. The F_4 population originated from the cross, Guatemala 14-2 (Cambridge collection) x Remus. The paternal line was Pc-H-46-1BK, released from Mayaguez in 1979 as a multiple disease resistant Scarlet Runner bean (*P. coccineus*) line produced by N. G. Vakili from intensive recurrent selection of P.I. 273667 (Ethiopia).

The interspecific cross and F_1 seed increase were accomplished at the University of Florida. Subsequent selection through the F_4 was undertaken in Puerto Rico in the greenhouse and at two locations in the field in the presence of many highly virulent strains of *Xanthomonas* and where climatic conditions cause particularly high disease pressure, not only for bacterial blight, but for other common bean diseases.

XR-235-1-1 shows some segregation but is quite uniform for the following characteristics: The plant is a short, erect, very bushy, semi-vine tending to vine with age, and shows a strong perennial growth tendency as long as growing conditions are favorable. The basal stem is strong and upright supported by a very strong root system showing high resistance to root rots, especially ashy stem blight (*Macrophomina phaseoli* (Maubl.) Ashby). Leaves are small, dark green,

and very highly pubescent with many hooked hairs. The foliage has been very highly resistant to all Xanthomonas strains tested, has shown high levels of field resistance to viruses and is moderately resistant to rust in Puerto Rico. Inflorescences are lateral, few-flowered, persistent, and often continue to flower from the inflorescence nodes forming condensed capitate, lateral spikelets. Blooming initiates 35-40 days after planting at all seasons in Puerto Rico and often continues profusely for more than 60 days. If high temperatures prevail, pod and seed set are very low, however a normal set is obtained with a 20°C average temperature (max. 22°day and 17°night) with a 12-hour day-length. These conditions are recommended for all crosses with this breeding line. Seed is light cream or tan color, shiny, and fairly large (about 25 g/100) with 5-6 seed/pod. Pods are green (no pigments) through maturity and dry to a tan color. No yield estimates have been obtained due to the scarcity of seed.

Bean line XR-235-1-1 is recommended primarily for use in breeding programs as an outstanding source of Xanthomonas blight resistance.

Very limited amounts of seed (F_6 embryos) are available from MITA, P. O. Box 70, Mayaguez, Puerto Rico 00708.

Approved:

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